

Notice of Allowability

Application No.

10/816,628

Examiner

Marc S. Zimmer

Applicant(s)

LAMOLA ET AL.

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/02/04 and the interview of September 6, 2005.
2. ☒ The allowed claim(s) is/are 5-10.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 10/28/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-4, drawn to a polymer resin, classified in class 526, subclass 339.
- II. Claims 5-10, drawn to a method of making an encapsulated integrated circuit assembly, classified in class 428, subclass 462.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). . Insofar as the "resins" claimed in claims 1-4 are essentially just Diels-Alder products that are not even necessarily polymeric given that the diene is not required to have more than one pair of conjugated double bonds and the dienophiles are not required to have more than a single carbon-carbon double bond, they have various applications including as intermediates in the preparation of more complicated organic structures.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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During a telephone conversation with Matthew Cairns on September 1, 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 5-10. Claims 1-4 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Matthew Cairns on September 6, 2005.

The application has been amended as follows:

Please cancel claims 1-4.

In a separate interview that had taken place prior to that of September 6, Applicant had been apprised of the Examiner's intent to restrict claims 1-4 from claims 5-10 under the rationale that the polymer resins of the first group were related to the

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methods of the second group as a product and a method of using the same. Applicant elected claims 5-10 and later authorized the cancellation of claims 1-4 after the Examiner concluded that claims 5-10 were allowable.

Claim Analysis

Applicant is advised that, for the purpose of evaluating the claims against the prior art, the term "polycyclosiloxane" was taken as referring to a polymer material featuring cyclic siloxane residues in the backbone. These materials are to be distinguished from linear polymers derived simply from the ring-opening polymerization of cyclosiloxanes.

Allowable Subject Matter

Applicant claims a method of making an encapsulated integrated circuit assembly and the assembly itself wherein the inventive aspect is the employment of underfill compositions comprising either polycyclosiloxanes or resins derived from Diels-Alder reaction chemistry.

The prior art teaches numerous encapsulants and/or underfill materials derived from a diene and a dienophile. However, in all instances, the diene contained at least one sp^2 hybridized (olefinic) carbon to which no hydrogen atoms were attached, many of them being ring-substituted furans. See, for instance, the article entitled "Removable Foams Based on an Epoxy Resin Incorporating Reversible Diels-Alder Adducts" authored by Aubert et al., Small et al., U.S. Patent # 6,271,335, Wudl et al., U.S. Patent Application Publication no. 2004/0014933, Aubert, U.S. Patent # 6,825,315, Loy et al.,

U.S. Patent # 6,337,384, and Chen et al., U.S. Patent Application Publication no. 2004/0261904.

Concerning the method and article of claims 5 and 8 respectively, the Examiner was unable to find any suggestion whatsoever that polymers featuring cyclic siloxane residues in the backbone could be used as underfill materials.

The aforementioned documents represent the most germane references known to the Examiner. Insofar as a motivation for replacing the diene compounds with one bearing hydrogen atom substituents at every olefinic carbon atom could not be ascertain, claims 5-10 are not even rendered obvious by the prior art and are, therefore, allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 571-272-1096. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 6, 2005

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